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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,350	01/18/2006	Karl Koch	KOCH, K. ET AL - 1PCT	5598
25889	7590	02/15/2007		
WILLIAM COLLARD COLLARD & ROE, P.C. 1077 NORTHERN BOULEVARD ROSLYN, NY 11576			EXAMINER KERNS, KEVIN P	
			ART UNIT	PAPER NUMBER
			1725	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		02/15/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

**Application No.**

10/560,350

**Applicant(s)**

KOCH ET AL.

**Examiner**

Kevin P. Kerns

**Art Unit**

1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2005 and 18 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-20 is/are rejected.
- 7) ☒ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/12/05</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Specification*

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

In this instance, the abstract should be written on a separate sheet (currently written only on the front page of the corresponding WIPO document). In addition, the phrases that can be implied, "The invention relates to" and "According to the invention" should both be deleted from the abstract.

2. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.

- (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
  - (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
  - (i) DETAILED DESCRIPTION OF THE INVENTION.
  - (j) CLAIM OR CLAIMS (commencing on a separate sheet).
  - (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
  - (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

In this instance, the disclosure lacks specification headings.

### ***Claim Objections***

3. Claim 11 is objected to because of the following informalities: in the 8<sup>th</sup> line, replace "25°C" with "250°C" to be in agreement with the specification and claim 12. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:
- The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 11-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to independent claims 11 and 12, these method claims are generally written in a narrative format, rendering the claims indefinite. These method claims should be written to distinctly set forth positive, active process steps.

With regard to independent claims 11 and 12, it is unclear what is meant by "an additive on the basis of an organic and inorganic component". What is the relationship (ratios?) between the additive and the organic/inorganic component? Is the "additive" a foundry binder? Are both organic and inorganic components present, or only one of them present? Usually, only one of them is present in conventional foundry sand preparation methods.

Claims 11 and 12 recite the limitation "the additive grains in question". There is insufficient antecedent basis for this limitation in the claim. In this instance, it is suggested to delete the phrase "in question".

Claims 11 and 12 recite the limitations "the basis", "the gas amount", and "the mixing process". There are insufficient antecedent basis for these limitations in the claims.

With regard to independent claim 12, it is unclear what is meant by the limitation "impregnated with a sheathing of an additive". What is the "sheathing" in this instance? A "sheathing" is normally an exterior covering, but "impregnating" implies an interior feature (cannot be a "sheathing"), in contradiction to the meaning of these terms.

Claim 15 recites the limitation "the oxygen content". There is insufficient antecedent basis for this limitation in the claim.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board

Art Unit: 1725

of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 15 recites the broad recitation "oxygen content", and the claim also recites "preferably of the organic component..." and "particularly less than 20wt.%", which are the narrower statements of the range/limitation.

Claim 20 recites the broad recitation "aggregate grains", and the claim also recites "particularly more than 90 wt.%..." and "preferably a grain size of 0.09 mm and more", which are the narrower statements of the range/limitation.

Claim 16 recites the limitation "the gas amount". There is insufficient antecedent basis for this limitation in the claim.

Claim 17 recites the limitation "the component in question". There is insufficient antecedent basis for this limitation in the claim. In this instance, it is suggested to delete the phrase "in question".

Regarding claim 18, the phrase "or the like" (in this instance "etc.") renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed

Art Unit: 1725

(those encompassed by "or the like", or "etc."), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

Claim 19 recites the limitation "the aggregate grains". There is insufficient antecedent basis for this limitation in the claim. In this instance, it is suggested to change its dependency from claim 11 to claim 12 to obtain proper antecedent basis.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 11-20 insofar as definite (in view of the 35 USC 112, 2<sup>nd</sup> paragraph rejections) are rejected under 35 U.S.C. 103(a) as being unpatentable over Myers et al. (US 2,828,214) in view of Prat Urreiztieta (US 6,598,654).

Myers et al. disclose a method for producing core/molding sand for use in casting processes, in which the core/molding sand includes a foundry binder and additive, and the process of preparation includes providing a basic granular mineral molding material (foundry sand) having an average grain size of less than 0.05 mm; mixing foundry sand with additive and aggregate grains (finely divided flax shive material, either new or reused, having particle sizes between 50 and 300 microns, of more than 50 wt% higher than 0.05 mm grain size) that contain materials such as ground cellulose and milled flax (organic additives/aggregates with high carbon content of >50% and low oxygen content), as well as bentonite (inorganic additive/aggregate with low oxygen content), with core oil (hydrocarbon resin) and/or water, and mixing of this mixture results in the foundry sand grains being sheathed (coated) by the additive(s); and heating the core/molding sand at elevated temperatures to form a cured core/mold (column 1, lines 15-72; column 2, lines 1-31 and 43-53; column 3, lines 21-75; column 4, lines 1-12 and 30-55; and Examples I-V). Myers et al. do not specifically disclose that the additive emits a low amount (less than 500 ml/g, or 350 ml/g) upon heating to high temperature.

However, Prat Urreiztieta discloses a molding sand appropriate for the fabrication of cores and molds for subsequent use for iron casting, in which the molding sand comprises hollow aluminosilicate microspheres in an amount between 1 and 30% by weight with respect to the total amount of molding sand (or at least 20% by volume,



since the density of the microspheres is only 0.4 g/cc versus 1.3-1.75 g/cc for the types of sand listed in Figure 3), with the molding sand containing an effective amount of foundry binder (aggregates or gaseous cured catalyst with low production of gas), such that the molding sand that contains the hollow aluminosilicate microspheres has the advantageous properties of manufacturing low density cores and molds with good "veining" and penetration characteristics (mechanical properties) to improve the quality in the manufacture of iron castings via reduction of defects caused by core expansion and gas production at high temperature (abstract; column 1, lines 11-14; column 2, lines 40-67; column 3, lines 1-15 and 45-54; column 4, lines 41-63; column 5, lines 25-43; column 6, lines 50-67; column 7, lines 1-67; column 8, lines 1-67; and Figures 1-5).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the method for producing core/molding sand for use in casting processes, in which the core/molding sand includes a foundry sand binder and additive, as disclosed by Myers et al., by using the molding sand that comprises hollow aluminosilicate microspheres that are prepared with low production of gas, as taught by Prat Urreiztieta, in order to manufacture low density cores and molds with good "veining" and penetration characteristics (mechanical properties) to improve the quality in the manufacture of iron castings via reduction of defects caused by core expansion and gas production at high temperature (Prat Urreiztieta; abstract; column 2, lines 40-54 and 64-67; column 3, lines 1-15 and 50-54; and column 7, lines 1-6).

**Conclusion**

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kevin P. Kerns whose telephone number is (571) 272-1178. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin P. Kerns *Kevin Kerns 2/12/07*  
Primary Examiner  
Art Unit 1725

KPK

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February 12, 2007